



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/715,261

11/17/2003

Chungte W. Chen

PD-03W049

4587

23915

7590

09/21/2006

PATENT DOCKET ADMINISTRATION
RAYTHEON SYSTEMS COMPANY
P.O. BOX 902 (E1/E150)
BLDG E1 M S E150
EL SEGUNDO, CA 90245-0902

EXAMINER

PAYNE, DAVID C

ART UNIT

PAPER NUMBER

2613

DATE MAILED: 09/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

87

Office Action Summary	Application No.		Applicant(s)	
	10/715,261		CHEN, CHUNGTE W.	
	Examiner		Art Unit	
	David C. Payne		2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 11-14 is/are rejected.
- 7) ☒ Claim(s) 4-10 and 15-22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, and 11-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Roberson US 6233088 B1 (6233088).

Re claims 1-3 and 11-14

A reflector in accordance with the present invention will have many advantageous applications including the following. A first application may be as a field installed communications unit that is capable of communicating with a remote system where it may be too costly, too difficult, or undesirable to communicate using traditional forms of communication. An example may be tracking the movements of military troops about a battlefield. A second application may be as an emergency location device which has low power consumption. In this application, where ground clutter and other obstacles may reduce visibility and introduce noise, a retroreflector that modulates an interrogation signal so as to return a distinctive reflected signal may aid in the location of a lost person or vehicle. A third application may be in security verification of distant objects such as is currently done with proximate objects using magnetic badges and bar codes, e.g., col./lines: 3/1-17.

By controlling the frequency of actuation of the plate members 30, data can be encoded on the reflected radiation signal using a variety of modulation schemes such as amplitude modulation, phase modulation, or frequency modulation. For instance, if the incident radiation signal is a direct current (DC) signal, then the plate members 30 can be actuated in time so that the reflected radiation signal oscillates between essentially two power levels. Thus, binary data may be encoded on the reflected radiation signal.

The electrostatic plates 12 described above can achieve modulation frequencies in the kilohertz range. An inhibitor to even higher frequency operation is air dampening or resistance. The problem of air dampening may

be reduced by fabricating narrower plate members 30, and/or fabricating ventilation holes through the plate members 30. Alternatively, the structure can be fabricated in a vacuum package that is hermetically sealed to substantially eliminate the problem of air dampening when actuating the electrostatic plates.

It is further noted that the amount of attenuation imposed upon the incident radiation signal can be controlled. For example, the attenuation can be controlled by the amount of the reflective surface(s) that is covered by the electrostatic plates. If only a small portion of the reflective surface is covered by one or more electrostatic plate, then a corresponding portion of the incident radiation signal is scattered when the electrostatic plates are in a curled position (i.e., an unactuated position as illustrated in FIG. 2B). Likewise, by covering a larger portion of the reflective surface(s) of a retroreflector, a correspondingly larger portion of the incident radiation signal is scattered, and therefore, less of the incident radiation signal is reflected back by the retroreflector. Accordingly, the characteristics of the reflected radiation signal can be partially controlled by designing a retroreflector having a defined portion of its reflective surface(s) covered by electrostatic plates. If a sufficient portion of the reflective surface(s) is covered by electrostatic plates, then substantially all of the incident radiation signal may be scattered and essentially none of the radiation signal will be reflected back to the radiation source. Such a configuration may be particularly advantageous in certain applications such as in a battlefield where it may be desirable not to reflect any of the incident radiation beam until verification can be made that the incident beam is from a friendly interrogation unit.

In an effort to reduce the signature of a retroreflector in accordance with the present invention, the electrostatic plates may be disposed in a non-regular pattern on one or more reflective surfaces of the corner-cube retroreflector, as illustrated in FIG. 4. The non-regular pattern of the electrostatic plates on the corner-cube retroreflector 40 is less likely to produce a recognizable reflection when the electrostatic plates are in a curled position, which may prevent the reflection from being detected as a recognizable signal. This may be particularly advantageous when the corner-cube retroreflector 40 is being used in IFF tasks, wherein the retroreflector 40 is mounted on a targeted object that does not want to reflect a radiation signal having a distinguishable signature that may be identified by unfriendly forces, e.g., col./lines: 8/66 – 9/55.

Allowable Subject Matter

3. Claims 4-10 and 15-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

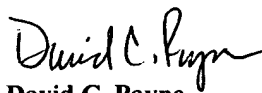
Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David C. Payne whose telephone number is (571) 272-3024. The examiner can normally be reached on M-F, 7:00a - 4:30p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Dcp


David C. Payne
Primary Examiner
AU 2613